

# Relating Biochemistry to Morphology Using Inquiry-Based Collaborative Student Research in Developmental Biology. Part 2. Implementation of the Plan

Carl S. Hoegler<sup>1</sup> and Charlene F. Blando-Hoegler<sup>2</sup>

<sup>1</sup> Mount Saint Mary College, Division of Natural Sciences, Biology Department, Newburgh NY 12550 USA

<sup>2</sup> Pace University, Department of Biology and Health Sciences, Pleasantville NY 10570 USA

([hoegler@msmc.edu](mailto:hoegler@msmc.edu); [choegler@pace.edu](mailto:choegler@pace.edu))

After our 2009 ABLE presentation of an experimental design for inquiry-based collaborative (IBC) laboratory learning, this plan was introduced into a Developmental Biology lab course. The lab was divided into two phases. Sixteen upper-level science majors were first presented with Phase I (instructor-prescribed) to prepare them for Phase II (student-centered) wherein they developed their own research project. The success of this pedagogy was evaluated from students' outcomes as well as responses to end-course questionnaires. In Phase I students reacted positively to library research, culturing methods, research protocols and reports. In Phase II the class was divided into 4 teams, which executed and presented their own research project related to amphibian development using IBC. Questionnaire results suggested overwhelming approval of research in small groups. Seventy-three percent of students expressed confidence about performing independent research and 53% felt success after completing this requirement. Moreover, four students did submit two projects at an intercollegiate undergraduate conference. Although only 20% of the students in this course felt strongly that IBC should be part of the undergraduate education, exposure to this pedagogy appears to have provided a rewarding experience.

**Keywords:** Inquiry-based collaborative pedagogy, developmental biology, student-centered research, college laboratory

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